

IN THE CLAIMS:

Claim 1 (Currently Amended): A liquid crystal display device, comprising:

a lower substrate formed of a transparent material;

an upper substrate formed of an opaque material facing the lower substrate;

a plurality of common electrode electrodes and a plurality of data electrodes electrode on the lower substrate to generate an In-Plane switching mode electric field parallel to the lower and upper substrates; and

a liquid crystal layer having a helical alignment between the lower and upper substrates.

Claim 2 (Original): The device according to claim 1, wherein the liquid crystal layer having the helical alignment includes a cholesteric liquid crystal layer.

Claim 3 (Original): The device according to claim 1, wherein the liquid crystal layer having the helical alignment includes a ferroelectric liquid crystal layer.

Claim 4 (Original): The device according to claim 1, wherein liquid crystal molecules of the liquid crystal layer have a helical pitch controlled by the In-Plane switching mode electric field.

Claim 5 (Original): The device according to claim 4, wherein light having a wavelength corresponding to the helical pitch is reflected by the liquid crystal molecules.

Claim 6 (Canceled)

Claim 7 (Currently Amended): A liquid crystal display device, comprising:

- a lower substrate;

- an upper substrate disposed opposite to the lower substrate;

- a middle substrate disposed between the lower and upper substrate;

- a light-absorbing layer on the lower substrate;

- a gate line, a gate electrode, a common line, and a common electrode on the lower substrate;

- a gate insulating layer along an entire surface of the lower substrate;

- a thin film transistor including a semiconductor layer on the gate insulating layer above the gate electrode, source and drain electrodes above both sides of the semiconductor layer, and the gate electrode;

- a data line and a data electrode on the gate insulating layer perpendicular to the gate line;

- a passivation layer on the lower substrate including the data electrode;

- a first alignment layer on the passivation layer;

a black matrix layer on the upper substrate to prevent light leakage on the data line, the gate line, and the thin film transistor;

a second alignment layer on the upper substrate including the black matrix layer; and

a third alignment layer on a first side of the middle substrate facing the lower substrate;

a fourth alignment layer on a second side of the middle substrate facing the upper substrate;

a first liquid crystal layer having a first helical alignment between the upper and ~~lower~~ middle substrates; and

a second liquid crystal layer having a second helical alignment different from the first helical alignment between the lower and middle substrates.

Claim 8 (Currently Amended): The device according to claim 7, wherein the upper, middle, and lower substrates are formed of a transparent material.

Claim 9 (Original): The device according to claim 7, wherein the light-absorbing layer is formed between the lower substrate and the common electrode.

Claim 10 (Currently Amended): The device according to claim 7, wherein a voltage applied to the common electrode and the data electrode is proportional to a helical pitch of at least one of the first and second liquid crystal layer layers.

Claim 11 (Original): The device according to claim 7, wherein the first and second alignment layers are not rubbed, or have weak anchoring energy.

Claim 12 (Currently Amended): The device according to claim 7, wherein a helical axis of at least one of the first and second liquid crystal layer layers is perpendicular to the upper and lower substrates.

Claim 13 (Original): A liquid crystal display device, comprising:

- a light-absorbing layer on a first substrate;

- a first common electrode and a first data electrode on the first substrate;

- a first liquid crystal layer having a helical alignment to reflect circularly polarized light at one direction according to an In-Plane switching mode electric field induced by the first common electrode and the first data electrode;

- a second substrate on the first liquid crystal layer;

- a second liquid crystal layer having a helical alignment on the second substrate to reflect circularly polarized light at a direction different from that in the first liquid crystal layer;

- a third substrate on the second liquid crystal layer; and

- a second common electrode and a second data electrode on one of the second and third substrates to control the second liquid crystal layer.

Claim 14 (Original): The device according to claim 13, wherein the light-absorbing layer is formed between the lower substrate and the common electrode.

Claim 15 (Original): The device according to claim 13, further comprising first and second alignment layers formed on opposing surfaces of the first and second substrates, respectively.

Claim 16 (Original): The device according to claim 13, further comprising third and fourth alignment layers formed on opposing surfaces of the second and third substrates, respectively.

Claim 17 (Original): The device according to claim 13, further comprising a fourth substrate between the first liquid crystal layer and the second substrate.

Claim 18 (Original): The device according to claim 17, further comprising a phase difference plate between the fourth substrate and the second substrate.

Claim 19 (Original): The device according to claim 13, wherein the first and second liquid crystal layers include cholesteric liquid crystal layers.

Claim 20 (Original): The device according to claim 13, wherein the first and second liquid crystal layers include ferroelectric liquid crystal layers.

Claim 21 (Currently Amended): A method of fabricating a liquid crystal display device, comprising:

forming a plurality of common electrode electrodes and a plurality of data electrodes electrode on a lower substrate to generate an In-Plane switching mode electric field parallel to the lower substrate; and

forming a liquid crystal layer having a helical alignment between the lower substrate and an upper substrate,

wherein the upper substrate is formed of a transparent material and the lower substrate is formed of an opaque material.

Claim 22 (Original): The method according to claim 21, wherein the liquid crystal layer having the helical alignment includes a cholesteric liquid crystal layer.

Claim 23 (Original): The method according to claim 21, wherein the liquid crystal layer having the helical alignment includes a ferroelectric liquid crystal layer.

Claim 24 (Original): The method according to claim 21, wherein liquid crystal molecules of the liquid crystal layer have a helical pitch controlled by the In-Plane switching mode electric field.

Claim 25 (Original): The method according to claim 24, wherein light having a wavelength corresponding to the helical pitch is reflected by the liquid crystal

molecules.

Claim 26 (Canceled).

Claim 27 (Currently Amended): A method of fabricating a liquid crystal display device, comprising:

- forming a light-absorbing layer on a lower substrate;

- forming a gate line, a gate electrode, a common line, and a common electrode on the lower substrate;

- forming a gate insulating layer along an entire surface of the lower substrate;

- forming a thin film transistor on the lower substrate including a semiconductor layer on the gate insulating layer above the gate electrode, source and drain electrodes above both sides of the semiconductor layer, and the gate electrode;

- forming a data line and a data electrode on the gate insulating layer perpendicular to the gate line;

- forming a passivation layer on the lower substrate including the data electrode;

- forming a first alignment layer on the passivation layer;

- forming a black matrix layer on an upper substrate to prevent light leakage on the data line, the gate line, and the thin film transistor;

- forming a second alignment layer on the upper substrate including the black matrix layer; and

forming a first liquid crystal layer having a first helical alignment between the upper and lower substrates;

forming a middle substrate between the upper and lower substrates; and

forming a second liquid crystal layer having a second helical alignment different from the first helical alignment between the middle substrate and one of the upper and lower substrates.

Claim 28 (Original): The method according to claim 27, wherein the upper and lower substrates are formed of a transparent material.

Claim 29 (Original): The method according to claim 27, wherein the light-absorbing layer is formed between the lower substrate and the common electrode.

Claim 30 (Currently Amended): The method according to claim 27, wherein a voltage applied to the common electrode and the data electrode is proportional to a helical pitch of at least one of the first and second liquid crystal layer layers.

Claim 31 (Original): The method according to claim 27, wherein the first and second alignment layers are not rubbed, or have weak anchoring energy.

Claim 32 (Currently Amended): The method according to claim 27, wherein a helical axis of at least one of the first and second liquid crystal layer layers is perpendicular to

the upper and lower substrates.

Claim 33 (Original): A method of fabricating a liquid crystal display device, comprising:

forming a light-absorbing layer on a first substrate;

forming a first common electrode and a first data electrode on the first substrate;

forming a first liquid crystal layer having a helical alignment to reflect circularly polarized light at one direction according to an In-Plane switching mode electric field induced by the first common electrode and the first data electrode;

providing a second substrate on the first liquid crystal layer;

forming a second liquid crystal layer having a helical alignment on the second substrate to reflect circularly polarized light at a direction different from that in the first liquid crystal layer;

providing a third substrate on the second liquid crystal layer; and

forming a second common electrode and a second data electrode on one of the second and third substrates to control the second liquid crystal layer.

Claim 34 (Original): The method according to claim 33, wherein the light-absorbing layer is formed between the lower substrate and the common electrode.

Claim 35 (Original): The method according to claim 33, further comprising forming

first and second alignment layers on opposing surfaces of the first and second substrates, respectively.

Claim 36 (Original): The method according to claim 33, further comprising forming third and fourth alignment layers on opposing surfaces of the second and third substrates, respectively.

Claim 37 (Original): The method according to claim 33, further comprising providing a fourth substrate between the first liquid crystal layer and the second substrate.

Claim 38 (Original): The method according to claim 37, further comprising providing a phase difference plate between the fourth substrate and the second substrate.

Claim 39 (Original): The method according to claim 33, wherein the first and second liquid crystal layers include cholesteric liquid crystal layers.

Claim 40 (Original): The method according to claim 33, wherein the first and second liquid crystal layers include ferroelectric liquid crystal layers.